

CLAIMS

1. A method of producing a security document or device comprising a substrate and an optically diffractive device, the method comprising the step of:
irradiating an area of the substrate on one surface with patterned laser radiation to ablate selected portions of the surface and thereby form an optically diffractive structure in said one surface.
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2. A method of producing a security document or device according to claim 1, the method further comprising the step of:
placing a mask in the path of the laser radiation to create said patterned laser radiation.
3. A method of producing a security document or device according to either one of claims 1 or 2, wherein the substrate includes a transparent plastics film.
4. A method of producing a security document or device according to claim 3, wherein the transparent plastics film is formed from polymeric material.
5. A method of producing a security document or device according to either one of claims 3 or 4, wherein the substrate further includes a transparent coating applied to the transparent plastics film, the optically diffractive structure being formed in the transparent coating.
6. A method of producing a security document or device according to claim 5, wherein the transparent coating is formed from polymeric material.
7. A method of producing a security document or device according to either one of claims 5 or 6, wherein the substrate further includes a reflective coating applied to the transparent coating.

8. A method of producing a security document or device according to claim 7, wherein the reflective coating is formed from polymeric material containing metallic pigment particles.
9. A method of producing a security document or device according to either one of claims 7 or 8, wherein both the reflective coating and the transparent coating may be formed from material which is similarly resistant to physical degradation.
10. A method of producing a security document or device according to either one of claims 5 or 6, wherein the substrate further includes a transparent layer applied to the transparent coating.
11. A method of producing a security document or device according to claim 10, wherein the transparent layer is formed from polymeric material.
12. A method of producing a security document or device according to either one of claims 10 or 11, wherein both the transparent layer and the transparent coating are formed from material which is similarly resistant to physical degradation.
13. A method of producing a security document or device according to either one of claims 3 or 4, wherein the substrate further includes a reflective coating applied to the transparent plastics film, said optically diffractive structure being formed in the reflective coating.
14. A method of producing a security document or device according to claim 13, wherein the reflective coating is formed from polymeric material containing metallic pigment particles.

15. A method of producing a security document or device according to either one of claims 13 or 14, wherein the substrate further includes a transparent coating applied to the reflective coating.
16. A method of producing a security document or device according to claim 15, wherein the transparent coating is formed from a polymeric material.
17. A method of producing a security document or device according to either one of claims 15 or 16, wherein both the reflective coating and the transparent coating are made of material which is similarly resistant to physical degradation.
18. A method of producing a security document or device according to any one of the preceding claims, the method further comprising the step of :
applying at least one opacifying layer to the substrate, said at least one opacifying layer only partly covering a surface of the substrate to leave at least said optically diffractive device uncovered by said opacifying layer.
19. A method of producing a security document or device comprising a substrate and a detectable security device, the method comprising the step of:
exposing an area of the substrate on one surface to a photo-exposure process to generate a changed state in the surface of the substrate to produce a detectable effect in said surface, such as a polarisation pattern or an optically diffractive structure.
20. In an alternative form, the invention provides a method of producing a security document or device comprising a substrate and a detectable security device, the method comprising the step of:
exposing an area of the substrate on one surface to a light source which causes photo-polymerisation of the substrate which in turn produces a polarisation state or pattern.

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21. The method of claim 19 or 20 further including one or more of the steps or features as defined in any one of claims 2 to 18 when modified to refer to detectable security devices other than diffraction gratings, such as polarisation patterns.

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